

1-66901); and Claims 5/4/1, 5/4/2 were rejected under 35 U.S.C. §103(a) as being unpatentable over Roberts et al in view of Horii et al (U.S. Patent No. 3,824,521).

First, Applicants acknowledge the courtesy of the personal interview granted to Applicants' representatives by Examiner Lee on August 23, 2001. During the interview, the applied art of Collins (U.S. Patent No. 5,548,269), Roberts et al (GB 2 032 460 A), Mitsuo (JP 62-200246), and Horii et al (U.S. Patent No. 3,824,521) was discussed in detail. In particular, Applicants' representatives explained that none of the above-referenced applied art, either alone or in combination, disclose "the value of the length L, width ℓ , and the thickness e being defined such that a mass of the flat conductor resists electrical arcing," as recited in amended Claim 1. Examiner Lee indicated, pending a detailed reconsideration of the claims upon formal submission of a response, that the claimed invention appears to be definite.

The drawings were objected to under 37 CFR 1.83(a). This objection is respectfully traversed.

The Official Action states:

"the flat conductor in the shape of a coil" must be shown or the feature(s) canceled from the Claim(s).¹

However, the drawings at Figure 2 show the flat conductor 22 in the shape of a coil.

Therefore, it is respectfully submitted that the drawings do show the feature claimed.

Claims 6-17 were rejected under 37 CFR 1.75(c) as being multiple dependent claims in improper form. Claims 6, 7, 9, 10, 12, 13, and 15 have been amended to place the claims in proper dependent form. Claims 8, 14, 16, and 17 are presently in proper form and are

¹Official Action at page 2, paragraph 1, lines 2-3.

further dependent upon the above-discussed amended claims. Thus, it is respectfully submitted that Claims 6-17 are now in proper dependent form.

Claims 1-17 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as the invention. Independent Claim 1 has been amended to clarify the invention. Support for the amendment is provided at least at page 4, line 19, to page 5, line 3 of the specification. Thus, the amendment does not raise a question of new matter. Therefore, it is respectfully submitted that Claim 1, and claims dependent thereon, are now definite.

Claim 1 was rejected under 35 U.S.C. §102(b) as being anticipated by Collins. This rejection is respectfully traversed.

Applicants have noted problems in high voltage current limiting resistances for microwave tubes.² In particular, at the high voltages applied, these resistors are subject to electrical arcs, and their nominal resistor values vary and drift in time as a function of weather conditions.³

Applicants claimed invention provides a high voltage resistance that addresses these problems.⁴ In particular, the claimed invention includes a “[h]igh voltage resistance, comprising: at least one support and a flat conductor with length L , width ℓ , and thickness e fixed to the support and with a given resistivity ρ ,” and further such that “the value R of the resistance being equal to $\rho L/\ell e$,” as recited in amended Claim 1. Moreover, the claimed

²Specification at page 1, lines 13-27.

³*Id.* at page 1, line 14, to page 2, line 6.

⁴*Id.* at page 2, lines 7-14.

invention provides “ the value of the length L, width ℓ , and the thickness e being defined such that a mass of the flat conductor resists electrical arcing without exceeding a given temperature,” as recited in amended Claim 1. The claimed invention improves the operation of high voltage resistance for microwave amplifiers at least by “resisting electrical arcing without exceeding a given temperature,” as recited in amended Claim 1.

Collins discloses electrical resistors and resistor networks on an insulative substrate providing high resistance values.⁵ In particular, Collins discloses a planar resistor 10 on a substrate 15 in which the resistance R is provided by a resistive line r of total length l, line width w, and line spacing s.⁶ Further, Collins discloses resistive material of uniform thickness t, width w, and length l with a resistance $R = (\rho \times l) / (w \times t)$, where ρ is the specific resistivity of the material.⁷ However, Collins nowhere discloses “the value of the length L, width ℓ , and the thickness e being defined such that a mass of the flat conductor resists electrical arcing without exceeding a given temperature,” as recited in amended Claim 1.

Therefore, it is respectfully submitted that Collins does not disclose, inherently teach, or anticipate the claimed invention and thus amended Claim 1, and claims dependent thereon, patentably distinguish thereover.

Claims 1-3 were rejected under 35 U.S.C. §102(b) as being anticipated by Roberts et al. This rejection is respectfully traversed.

⁵Collins at Abstract, column 1, lines 10-16.

⁶*Id.* at Figure 1a, column 4, lines 23-34.

⁷*Id.* at column 4, lines 35-34.

Roberts et al discloses a method of treating an electrically resistive metal foil for improved bonding strength to a supporting substrate.⁸ In particular, Roberts et al discloses an electrically resistive metal foil comprised of cupronickel and a method of adhesion of the electrically resistive metal foil to a resinous substrate.⁹ However, Roberts et al nowhere discloses “the value of the length L, width ℓ , and the thickness e being defined such that a mass of the flat conductor resists electrical arcing without exceeding a given temperature,” as recited in amended Claim 1.

Therefore, it is respectfully submitted that Roberts et al does not disclose, inherently teach, or anticipate the claimed invention and thus amended Claim 1, and claims dependent thereon, patentably distinguish thereover.

Claims 4/1, 4/2, and 4/3 were rejected under 35 U.S.C. §103(a) as being unpatentable over Roberts et al in view of Mitsuo (JP 62-200246 1-66901).

Roberts et al, as above-discussed, nowhere discloses, inherently teaches, or anticipates the claimed invention of amended Claim 1 upon which Claim 4 depends. For those reasons alone, Roberts et al does not disclose the claimed invention of Claim 4.

In addition, the Official Action acknowledges other deficiencies in Roberts et al, regarding Claim 4, and cites the teachings in Mitsuo to overcome the recognized deficiencies in Roberts et al.¹⁰ However, the teachings in Mitsuo cannot overcome the deficiencies in Roberts et al for the reasons below-discussed.

⁸Roberts et al at page 1, lines 3-6.

⁹*Id.* at page 1, lines 14-29.

¹⁰See Official Action at page 4, paragraph 8, lines 7-9.

Mitsuo discloses a PTC element consisting of a laminate of two electrodes 3a, 3b and a substance 2 being held by the electrodes.¹¹ In particular, Mitsuo discloses the PTC element has a sufficient ratio of peak resistance-to-room temperature resistance, and is capable of being operated by small currents when overcurrents flow by inhibiting heat dissipation from the surface of the PTC element.¹²

However, Mitsuo nowhere discloses, suggests, or makes obvious “the value of the length L , width ℓ , and the thickness e being defined such that a mass of the flat conductor resists electrical arcing without exceeding a given temperature,” as recited in amended Claim 1. Thus, Mitsuo does not overcome the deficiencies in Roberts et al.

Therefore, it is respectfully submitted Roberts et al and Mitsuo, taken alone or in combination, do not disclose, suggest, or make obvious the claimed invention, and thus Claim 4 and claims dependent thereon, patentably distinguish thereover.

Claims 5/4/1, 5/4/2 were rejected under 35 U.S.C. §103(a) as being unpatentable over Roberts et al in view of Horii et al. This rejection is respectfully traversed.

Roberts et al, as above-discussed, nowhere discloses, inherently teaches, or anticipates the claimed invention of amended Claim 1 and Claim 4 upon which Claim 5 depends. For those reasons alone, Roberts et al does not disclose the claimed invention of Claim 5.

In addition, the Official Action acknowledges other deficiencies in Roberts et al, regarding Claim 5, and cites the teachings in Horii et al to overcome the recognized

¹¹Mitsuo at Constitution.

¹²*Id.* at Purpose.

deficiencies in Roberts et al.¹³ However, the teachings in Horii et al cannot overcome the deficiencies in Roberts et al for the reasons below-discussed.

Horii et al discloses a resistor which has a low resistance temperature coefficient.¹⁴ In particular, Horii et al discloses an invention that bonds a metal foil on an insulating base having a lower linear expansion coefficient than the metal so that the resistance temperature coefficient will be reduced.¹⁵

However, Horii et al nowhere discloses “the value of the length L, width ℓ , and the thickness e being defined such that a mass of the flat conductor resists electrical arcing without exceeding a given temperature,” as recited in amended Claim 1 and Claim 4 upon which Claim 5 depends. Thus, Horii et al does not overcome the deficiencies in Roberts et al.

Therefore, it is respectfully submitted Roberts et al and Horii et al, taken alone or in combination, do not disclose, suggest, or make obvious the claimed invention, and thus Claim 5 and claims dependent thereon, patentably distinguish thereover.

Accordingly, in view of the present amendment and in light of the previous discussion, it is respectfully submitted that this application is believed to be in condition for

¹³See Official Action at page 4, paragraph 8, lines 7-9.

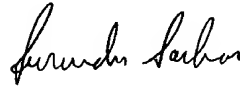
¹⁴Horii et al at Abstract, column 1, lines 3-5.

¹⁵*Id.* at column 1, lines 50-56.

formal allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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